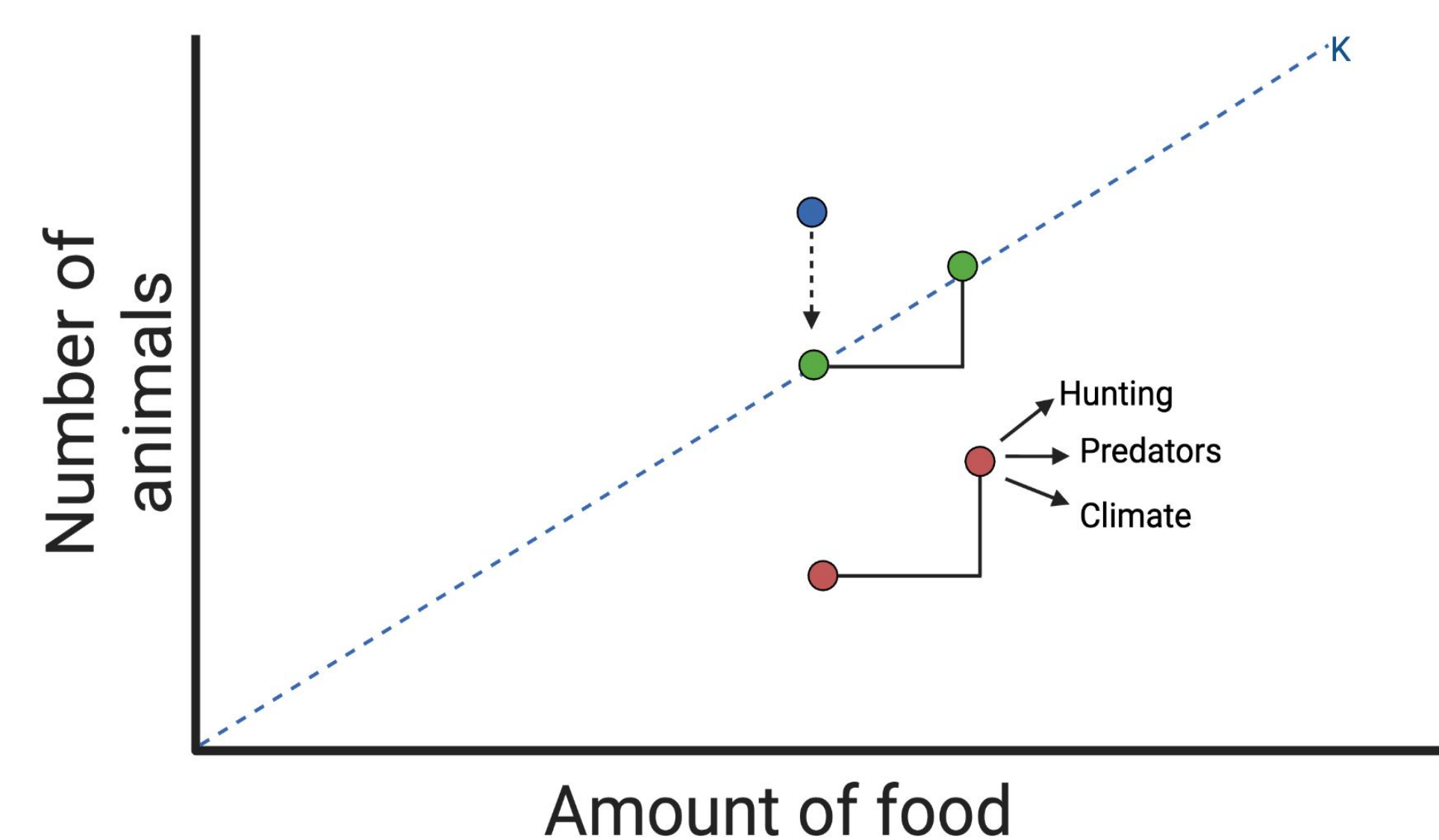


Not All Food Is Equal: Mast-Wildlife Relationships Depend on Population Status

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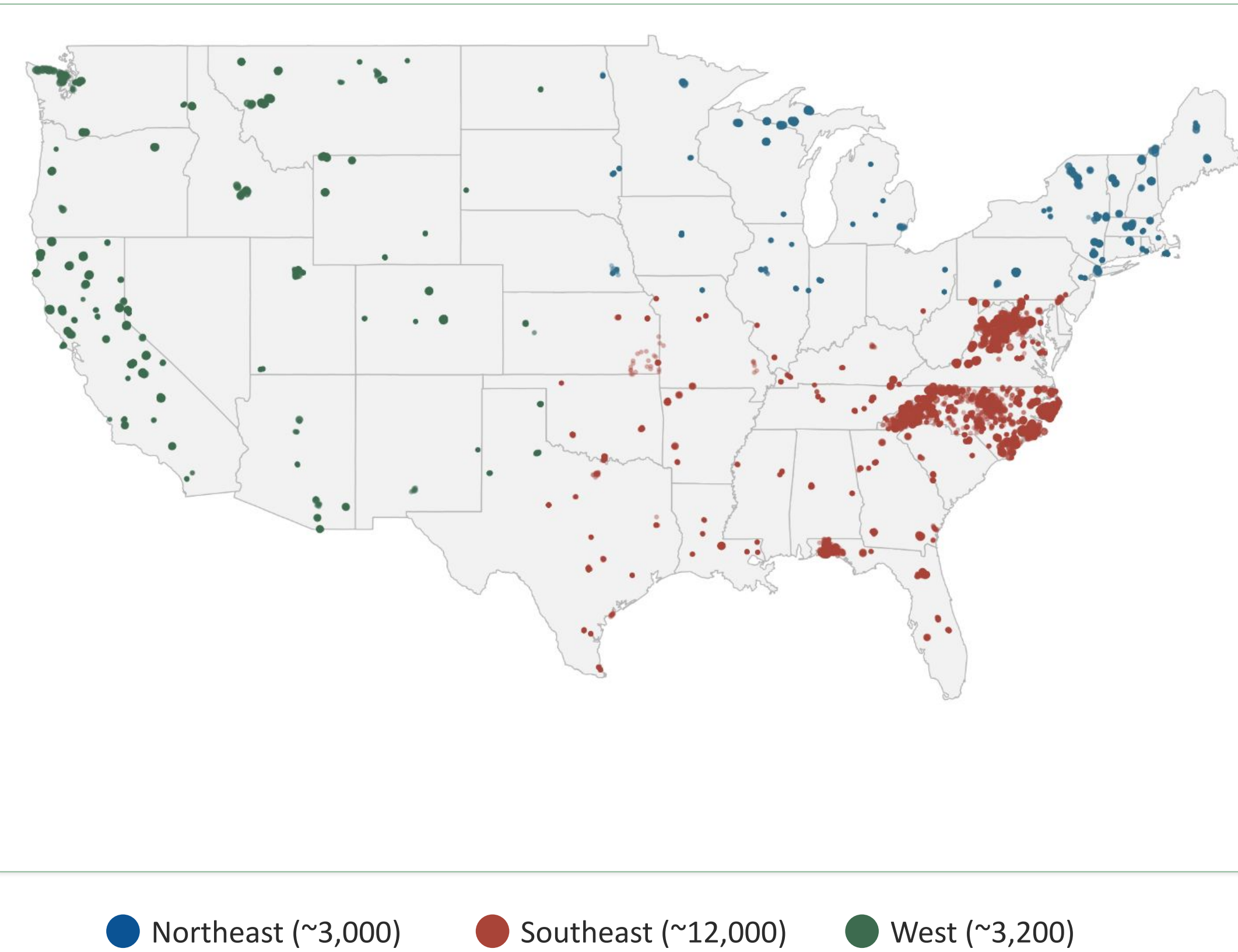
Background



At carrying capacity, food is the limiting factor -- more mast means more animals. Below carrying capacity, other factors limit the population, so more mast does not necessarily mean more animals.

Study Area

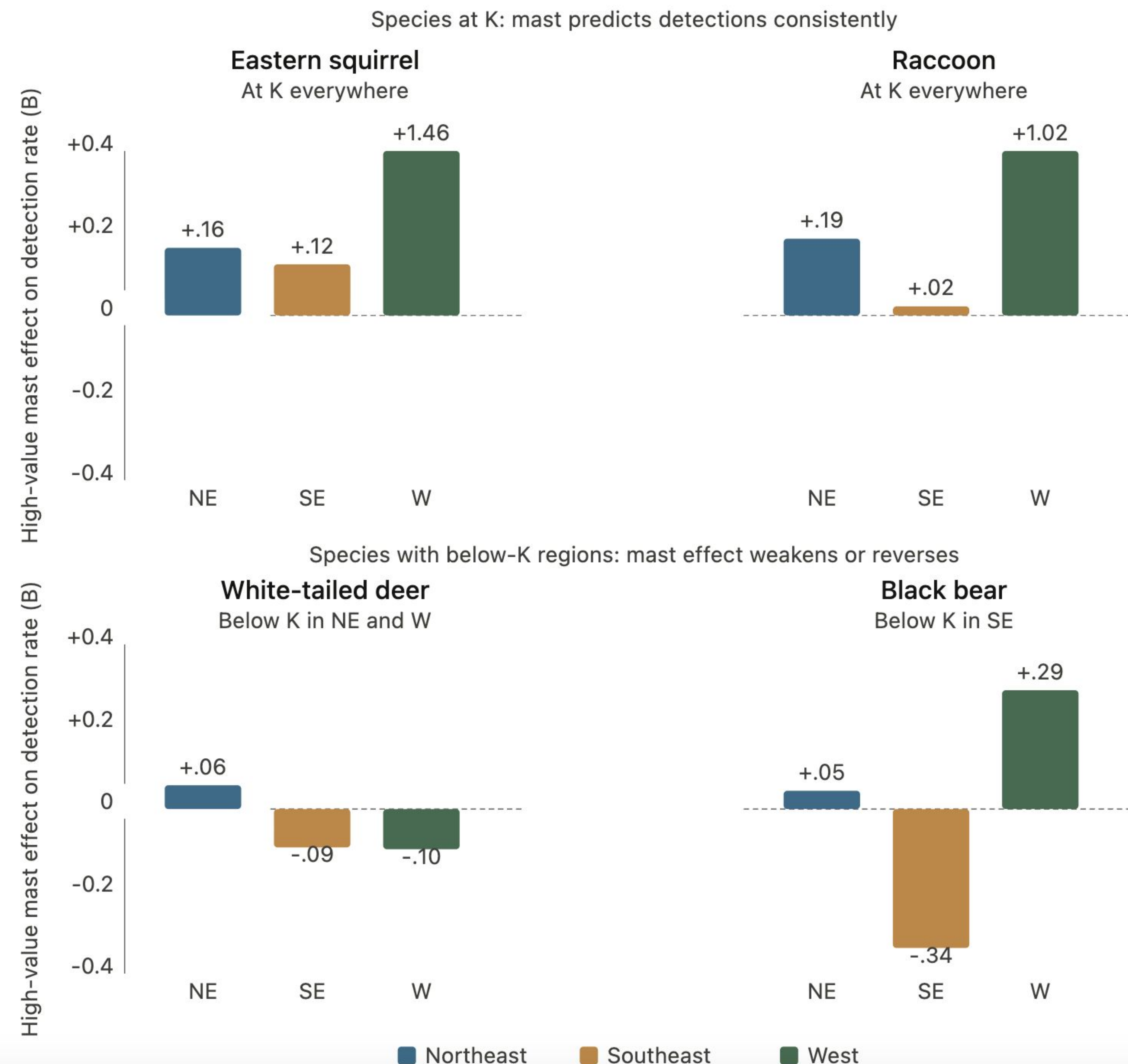
18,317 Camera Trap Deployments Across the USA



Acknowledgments

Data from Snapshot USA and collaborating camera trap networks. Mast data from the MASTIF dataset from Duke. FIA data from the US Forest Service Forest Inventory and Analysis program. Funding support from NC State University and the National Science Federation.

Results



Predictions

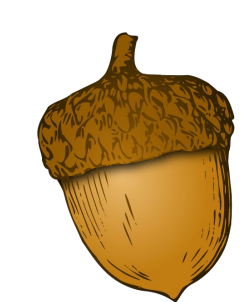
Near K ~ Mast
Below K ≠ Mast

Species	Hunting	Historic	At K?
Eastern Gray Squirrel	Low	Recovered	All Populations
Raccoon	Low	Recovered	All
White-tailed deer	High	Recovered	Some (Hunting)
Black bear	Medium	Some (Spatial differences)	Some (Hunting + Historic)

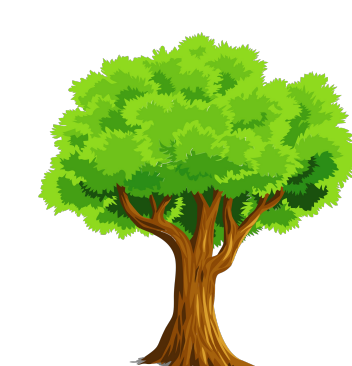
Methods



18,317



278



196,000

Negative Binomial General Linear Mixed Modeling:

$$\text{Mammal detection rate}_{\text{region}} \sim \text{offset}(\log(\text{effort})) + [\text{Mast composition}] + [\text{Habitat}] + (1|\text{ecoregion/cell})$$

Next Steps

Add agriculture covariate to test alongside urban, forest, temperature, and precipitation as site-level moderators of the mast-detection relationship

Spatially varying coefficients to map where mast has positive vs negative associations with bear detections across the landscape, rather than relying on discrete regional categories

Expand tannin data beyond the current 52 species to test whether tannin content explains within-oak variation in bear response

